DOCUMENT RESUME

ED 428 210 CE 078 243

TITLE	Assessing the Learning Organization.
PUB DATE	1997-03-00
NOTE	25p.; In: Academy of Human Resource Development (AHRD) Conference Proceedings (Atlanta, Georgia, March 6-9, 1997); see CE 078 221.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Adult Education; Human Resources; *Labor Force Development; *Learning Processes; *Measurement Techniques; Models; Organizational Change; *Organizational Development; Test Construction; Test Reliability; Test Validity
IDENTIFIERS	*Learning Organizations

ABSTRACT

This document contains four papers from a symposium on assessing the learning organization. "Measuring Organizational Learning: A Confirmatory Factor Analysis of an Organization Survey" (Jamie Callahan Fabian, Ralph O. Mueller, Dail L. Fields) compares two models for measuring four constructs inherent to Schwandt's model of organizational learning that reflect completely different approaches to derivation but are nearly equal in their ability to reproduce the data. "Operationalizing Organizational Learning Models Using the Dechant/Marsick Instrument" (Andrea Hornett) proposes using this instrument to operationalize Huber's (1991) and Schwandt's (1995) models for organizational learning and develop a model that enables visualization of the learning process at individual, group, and organizational levels. "Measuring Dimensions of the Learning Organization" (Karen E. Watkins, Baiyin Yang, Victoria J. Marsick) reports preliminary findings from an ongoing instrument development and validation study of dimensions of the learning organization that involved use of the survey across numerous organizations to establish reliability and validity and development of emerging norms for each scale dimension. "Finding Common and Uncommon Ground among Learning Organization Models" (Martha A. Gephart, Victoria J. Marsick, Mark E. Van Buren) presents results of a comparison of models of learning organization scholars to an overarching framework that identified areas of consensus or divergence. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 428 210

AHRD

ACADEMY OF HUMAN RESOURCE DEVELOPMENT

1997 Conference Proceedings

March 6-9, 1997
Atlanta, GA

21 **Assessing the Learning Organization**

Chair: Albert K. Wiswell, Virginia Polytechnic Institute & State University

Measuring Organizational Learning: A Confirmatory Factor Analysis of an Organizational Survey
Jamie Callahan Fabian, George Washington University
Ralph O. Mueller, George Washington University
Dail L. Fields, George Washington University

Operationalizing Organizational Learning Models Using the Dechant/Marsick Instrument
Andrea Hornett, George Washington University

Measuring Dimensions of the Learning Organization
Karen E. Watkins, The University of Georgia
Baiyin Yang, Auburn University
Victoria J. Marsick, Columbia University

Finding Common and Uncommon Ground Among Learning Organization Models
Martha A. Gephart, Columbia University
Victoria J. Marsick, Columbia University
Mark E. Van Buren, American Society for Training and Development

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

J Fabian K Watkins
A Hornett M Van Buren

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

CE 078 243

BEST COPY AVAILABLE

Measuring Organizational Learning: A Confirmatory Factor Analysis of an Organization Survey

Jamie Callahan Fabian
The George Washington University

Ralph O. Mueller
The George Washington University

Dail L. Fields
The George Washington University

This study compares two schemes for measuring the four constructs inherent to Schwandt's (1994) model of organizational learning. The comparison examines the fit of the confirmatory factor analysis of each measurement approach to the actual data values from a large (N=1580) sample of employee responses obtained in a single company. Although reflecting completely different approaches to derivation, the models are nearly equal in their ability to reproduce the data. The implications are generally positive and suggest next steps to improve our ability to measure degrees of organizational learning in different settings.

One theoretical frame for organizational learning is Parson's General Theory of Action (Parsons, Bales, & Shils, 1953). Parsons' point of reference was that of a system, which he defined as being "made up of two or more *units* or *members* which interact with each other ... is conceived to be embedded in an environing situation" (Parsons, et al, 1953, p. 174). The General Theory of Action draws upon systems theory (Miller, 1955; Katz & Kahn, 1978; Burrell & Morgan, 1979; Bahg, 1990) and uses biological organisms as a model for the functioning of higher order entities, including organizations (Burrell & Morgan, 1979). The idea is that just as organisms seek to survive, so do higher-order systems including organizations. Parsons suggests four functional prerequisites which must be performed by any system in order to survive (Parsons, et al, 1953; Ritzer, 1992). These are: (a) Adaptation - the complex of actions which both *adapt* and *adapt to* the external environment; (b) Goal attainment - those actions which identify and achieve the goals of the system; (c) Integration - the complex of actions which governs the interrelationship between the elements of the system and the other functional prerequisites; and (d) Pattern Maintenance - those actions which create, maintain, and renew individual behaviors and cultural patterns within the system.

Applying these prerequisites to organizational learning, Schwandt identified four subsystems (Schwandt, 1994) which might help explain how members of organizations collectively engage in learning. Within Parson's Adaptation function, Schwandt defines Environmental Interface as an organizational learning related subsystem which functions "as the informational portal for the organizational learning system" (Schwandt, 1994, p. 19). This subsystem is comprised of interdependent activities which interpret signals both inside and outside the organization and which filter information brought into the organization. These actions are primarily environmental scanning efforts (Daft & Weick, 1984) which may include customer survey methods, public relations, and external networks.

Within Parson's Goal Attainment prerequisite, Schwandt identifies an Action/Reflection subsystem which amounts to the organization's methods for using information as a basis for action and subsequent reflection on those actions which creates knowledge. This enables the organization to not only achieve its goals, but also to understand the meaning of actions in order to make judgments about them. The actions of this subsystem include both day-to-day procedures and operations and major actions which have a significant impact on the organization's ability to adapt. The reflection upon these actions creates new knowledge referenced to goals and may include actions such as decision-making processes, evaluations, and inter or intra-group conflicts.

The Dissemination and Diffusion subsystem (Schwandt, 1995) falls within Parson's functional prerequisite of Integration. The purpose of this subsystem is to transfer information and knowledge

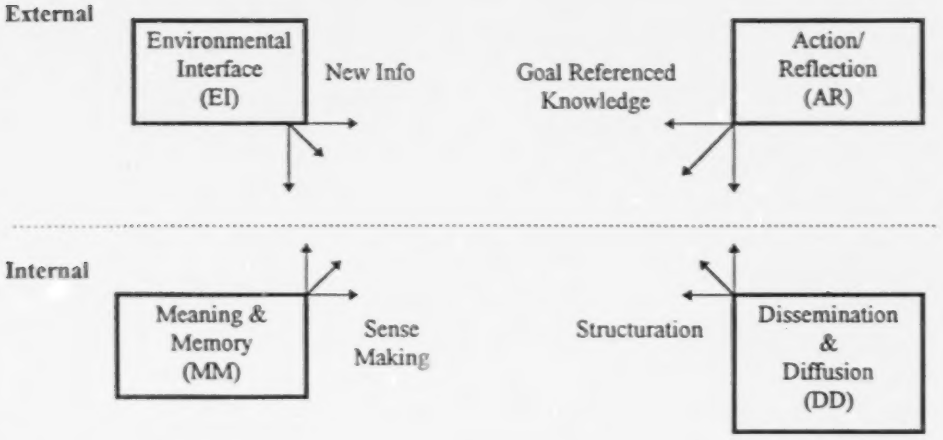
© copyright, Jamie Callahan Fabian, Ralph O. Mueller, Dail L. Fields, 1997

throughout the organization by means of formal (dissemination) and informal (diffusion) transfer mechanisms. The formal dissemination processes may include policies, communication technologies, and organizational reporting structures. Diffusion processes are more informal means of knowledge transfer and include actions such as networking, rumors, and informal communication.

Finally, the Meaning and Memory subsystem, included within Parson's Pattern Maintenance prerequisite, is the foundation "from which the other subsystems draw guidance and control" (Schwandt, 1994, p. 22). It is comprised primarily of symbols (such as language) and actions which stimulate a shared understanding (or meaning) of the culture, values, and assumptions of the organization. The memory element of the subsystem includes storage mechanisms such as organizational stories and histories, prior organizational actions, and organizational structure.

The Environmental Interface and Action/Reflection subsystems are both primarily externally focused, while Dissemination and Diffusion and Meaning and Memory are largely internally directed. These subsystems are highly interdependent so changes in one of the subsystems inevitably influence the functioning of the others. Schwandt (1995) called these patterns of interdependence "media of interchange." The functional prerequisites, learning subsystems, and media of interchange that make up this model of organizational learning are shown in Figure 1.

Figure 1. The Organizational Learning Model (Adapted from Schwandt, 1995)



By defining the specific components of organizational learning, this model provides an opportunity to develop psychometrically sound tools to measure the extent to which organizations are involved with organizational learning. To date, most research efforts to gauge organizational learning activities have taken place within selected organizations. However, the organizational learning concept is by nature one that should be applicable across organizations of various types in a range of industries. This study is a first step towards an empirical test of the constructs and structure of this model of organizational learning. That is, we make use of questions that were originally written for other purposes, but which can be logically related to the latent constructs in this model to examine two alternative measurement approaches. The first is based on the relationship of eighteen questions to the four constructs provided by a panel of twelve persons with previous training and education in the field of human resource development. Specifically, we asked this panel to relate the questions to the four latent variables. We then compare this measurement scheme to an alternative derived through exploratory factor analysis. The comparison examines the fit of the confirmatory factor analysis of each measurement approach to the actual data values in a large (N=1580) sample of employee responses obtained from a single company.

In making this comparison, we are attempting to determine if there are substantial differences between the structure of the two alternative approaches to measuring organizational learning, and whether one approach appears to be better than the other.

Methodology and Data

The sample for this study consists of 1580 members of a northeastern business-supply manufacturing and distribution company who responded to an organizational survey conducted in 1994. This sample represented 88% of the organization at the time of the survey. The questions used in this study were embedded in a survey which consisted of 134 questions, which covered demographic information, communication, reward system, resources, customer/market, and management practices besides organizational learning.

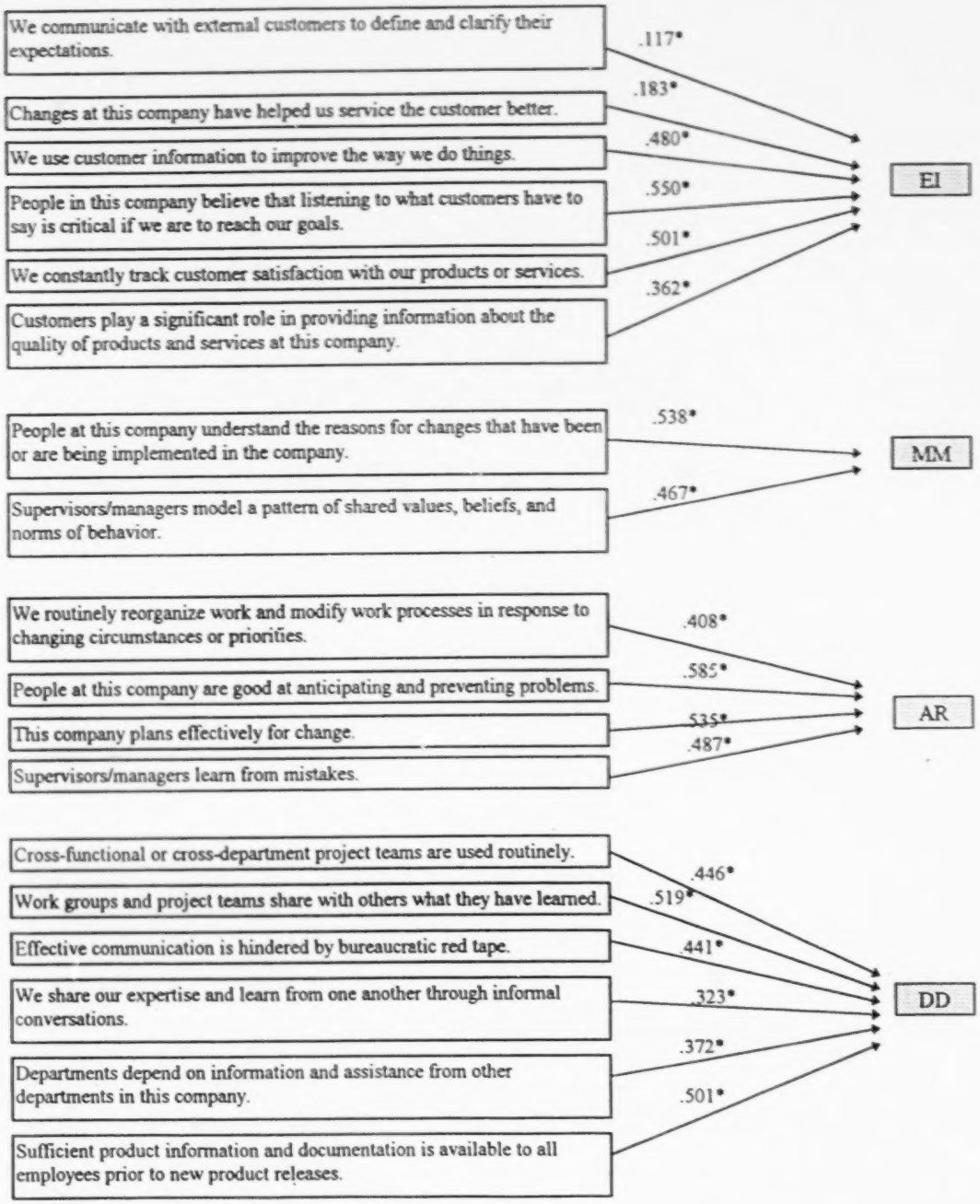
We initially identified 42 questions from the 134 in the complete survey that we associated *apriori* with the organizational learning constructs. We then asked a panel of 11 individuals familiar with the concepts of organizational learning through their current or previous studies as graduate students in human resource development, to associate the 42 questions with the four organizational constructs of Environmental Interface (EI), Action/Reflection (AR), Dissemination/Diffusion (DD), and Memory/Meaning (MM). We analyzed the interrater agreement of the associations made by the panel. For 22 of the questions, we found agreement in the assignments made by nine or more of the panel members. We then used one-half of the sample (N=790) to conduct an exploratory factor analysis, constrained to four factors to maintain consistency with the Schwandt model. We found in the exploratory factor analysis that four items had significant cross-loadings (greater than .40) on two or more factors. Those items which loaded on more than one factor were removed from both the measurement structure suggested by the panel (referred to as the Heuristic Model) and the measurement structure based on the exploratory factor analysis (referred to as the Empirical Model). The 18 questions included in both measurement approaches are shown Figures 2 and 3 below. Both measurement approaches were then subjected to confirmatory factor analysis via LISREL 8 using the remaining half of the sample (N=790).

Results

The results of the confirmatory factor analyses are presented below in Figures 2 and 3. These figures illustrate the relationship of the questions to the four constructs of organizational learning inherent to each measurement approach, as well as the overall goodness-of-fit measures for each confirmatory model. Based on the goodness-of-fit measures, the models seem to fit the measured data about equally well. That is, although the Chi-square for the Heuristic Model is significantly larger than that for the Empirical Model (indicating worse fit to the data for the Heuristic Model), the values of the other measures of fit (GFI, NFI, CFI, and RMSR) are the same or slightly better for the Heuristic Model. All of the path coefficients in both models are statistically significant. Considering all of this information, the Heuristic and Empirical measurement models do not appear to differ in terms of their ability to reproduce the data. However, except for the construct of Environmental Interface, both models associate different questions with the organizational learning constructs.

In further analyses, we also examined the internal reliability (coefficient alpha) of each of the multi-item scales in each measurement model. Only the reliability of Action/Reflection (AR) in the Empirical Model exceeded the value of .70, generally considered the minimum acceptable level for this reliability measure. The mean reliability across the four scales of the Empirical Model was slightly larger (.61) than the average reliability across the four scales of the Heuristic Model (.54).

Figure 2. Confirmatory Factor Analysis of the Heuristic Model of Organizational Learning

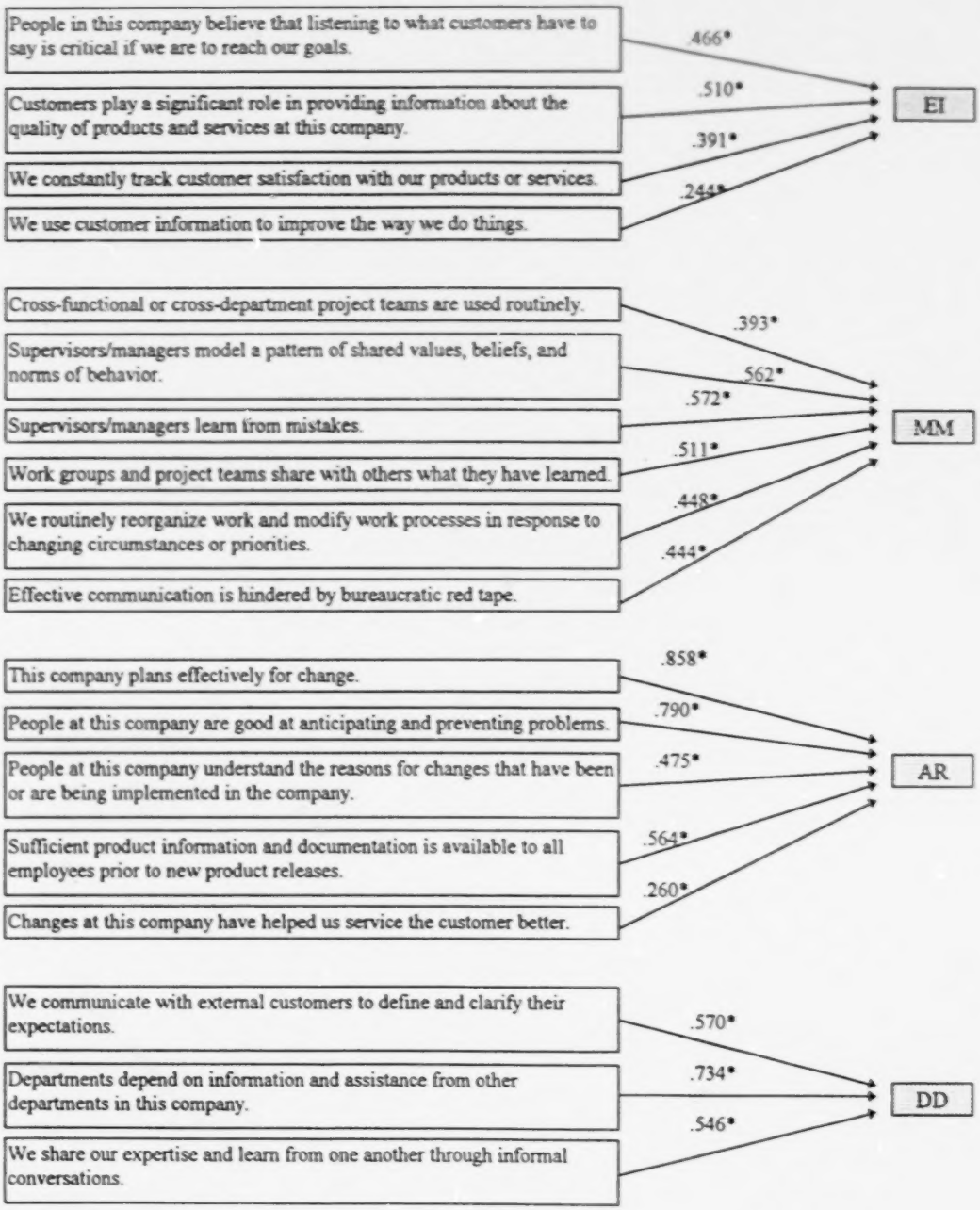

We communicate with external customers to define and clarify their expectations.
Changes at this company have helped us service the customer better.
We use customer information to improve the way we do things.
People in this company believe that listening to what customers have to say is critical if we are to reach our goals.
We constantly track customer satisfaction with our products or services.
Customers play a significant role in providing information about the quality of products and services at this company.
.117*
.183*
.480*
.550*
.501*
.362*
EI
People at this company understand the reasons for changes that have been or are being implemented in the company.
Supervisors/managers model a pattern of shared values, beliefs, and norms of behavior.
.538*
.467*
MM
We routinely reorganize work and modify work processes in response to changing circumstances or priorities.
People at this company are good at anticipating and preventing problems.
This company plans effectively for change.
Supervisors/managers learn from mistakes.
.408*
.585*
.535*
.487*
AR
Cross-functional or cross-department project teams are used routinely.
Work groups and project teams share with others what they have learned.
Effective communication is hindered by bureaucratic red tape.
We share our expertise and learn from one another through informal conversations.
Departments depend on information and assistance from other departments in this company.
Sufficient product information and documentation is available to all employees prior to new product releases.
.446*
.519*
.441*
.323*
.372*
.501*
DD

* $p<.05$

Chi-square with 129 df= 506.741; Root Mean Square Residual (RMR)= 0.0730;
Goodness of Fit Index (GFI)= 0.922; Adjusted Goodness of Fit Index (AGFI)= 0.896;
Normed Fit Index (NFI)= 0.672; Comparative Fit Index (CFI)= 0.729

BEST COPY AVAILABLE

Figure 3. Confirmatory Factor Analysis of the Empirical Model of Organizational Learning


People in this company believe that listening to what customers have to say is critical if we are to reach our goals.
Customers play a significant role in providing information about the quality of products and services at this company.
We constantly track customer satisfaction with our products or services.
We use customer information to improve the way we do things.
.466*
.510*
.391*
.244*
EI
Cross-functional or cross-department project teams are used routinely.
Supervisors/managers model a pattern of shared values, beliefs, and norms of behavior.
Supervisors/managers learn from mistakes.
Work groups and project teams share with others what they have learned.
We routinely reorganize work and modify work processes in response to changing circumstances or priorities.
Effective communication is hindered by bureaucratic red tape.
.393*
.562*
.572*
.511*
.448*
.444*
MM
This company plans effectively for change.
People at this company are good at anticipating and preventing problems.
People at this company understand the reasons for changes that have been or are being implemented in the company.
Sufficient product information and documentation is available to all employees prior to new product releases.
Changes at this company have helped us service the customer better.
.858*
.790*
.475*
.564*
.260*
AR
We communicate with external customers to define and clarify their expectations.
Departments depend on information and assistance from other departments in this company.
We share our expertise and learn from one another through informal conversations.
.570*
.734*
.546*
DD

*p<.05

Chi-square with 129 df= 473.846; Root Mean Square Residual (RMR)= 0.0798;
Goodness of Fit Index (GFI)= 0.929; Adjusted Goodness of Fit Index (AGFI)= 0.906;
Normed Fit Index (NFI)= 0.776; Comparative Fit Index (CFI)= 0.824

Conclusions

The results of our analysis have a certain good news-bad news quality. One part of the good news is that taking completely different approaches to measurement methods, we derived models that are nearly equal in their ability to reproduce data collected from a large sample of organizational employees. The related bad news is that despite our anticipation, one of the models does not emerge as significantly better than the other.

Another element of good news is that the same four questions are related to the construct of Environmental Interface (EI) in each model. EI seems to have the greatest level of consistency between the models. The related bad news is that the questions related to the other constructs differ substantially between the two models. It is possible that these differences reflect the inability of the questions to adequately describe the nature of each of these constructs. If so, then we need to generate and test better questions. It is also possible that the inconsistency between the two models reflects an ambiguity in description of the constructs of organizational learning introduced by the framing of the questions. That is, the Heuristic Model is based on asking a panel to relate questions to constructs based on organizations in general. The Empirical Model is based on asking respondents the same questions within the context of a single organization in which they are employed. If the difference in the linkage of questions to constructs results from this difference in framing, we not only have to look for better questions, but perhaps ask future panel members to choose based on reference to a particular organization. The generalizability of the resultant measurement approach can then be empirically evaluated through testing in several organizations.

References

Bahg, C.G. (1990). Major systems theories throughout the world. Behavioral Science, 35, 79-107.

Burrell, G. & Morgan, G. (1979). Sociological paradigms and organisational analysis. Portsmouth, NH: Heinemann Educational Books Inc.

Daft, R.L. & Weick, K.E. (1984). Toward a model of organizations as interpretation systems. Academy of Management Review, 2(2), 284-295.

Katz, D. & Kahn, R.L. (1978). The social psychology of organizations. (2d ed.) New York, NY: John Wiley & Sons, Inc.

Lundberg, C.C. (1989). On organizational learning: Implications and opportunities for expanding organizational development. In R.W. Woodman and W.A. Pasmore (Eds.), Research in organizational change and development, Vol 3. Greenwich, CT: JAI Press.

March, J.G. & Olsen, J.P. (1975). The uncertainty of the past: Organizational learning under amiguity. European Journal of Political Research, 3, 147-171.

Miller, J.G. (1955). Toward a general theory for the behavioral sciences. The American Psychologist, 10, 513-531.

Parsons, T., Bales, R.F., & Shils, E.A. (1953). Working papers in the theory of action. Glencoe, IL: The Free Press.

Ritzer, G. (1992). Classical sociological theory. New York, NY: MCGraw-Hill.

Schwandt, D.R. (1994). Organizational learning: A dynamic integrative construct. Proceedings, 10th Systems Dynamics Society Meeting in Edinburgh, Scotland.

Schwandt, D.R. (1995). Learning as an organization: A journey into chaos. In S. Chawla & J. Renesch (Eds.), Learning organizations: Developing cultures for tomorrow's workplace. (pp. 365-379). Portland, OR: Productivity Press.

Schwandt, D.R. (1996). Integrating strategy and organizational learning: A theory of action perspective. In A. Huff & J. Walsh (eds.), Advances in Strategic Management. Greenwich: JAI Press, Inc.

Simon, H.A. (1969). The architecture of complexity. In H.A. Simon (Ed.), The sciences of the artificial, pp. 84-118. Cambridge, MA.

Operationalizing Organizational Learning Models Using the Dechant/Marsick Instrument

Andrea Hornett
The George Washington University

The Dechant and Marsick Team Learning instrument was used to operationalize Huber's (1991) and Schwandt's (1995) models for organizational learning. The resulting combination model may prove useful for researchers and managers of teams and cohorts. The redrawn model enables visualization of the learning process at individual, group and organizational levels. Findings were analyzed using this approach in an empirical study of two doctoral cohorts.

Organizational science researchers have proposed a number of models to explain organizational learning (Daft and Weick, 1984; Huber, 1991; Kim, 1994; Nonaka, 1995; Schwandt, 1995). Researchers of groups and teams in organizations have also looked at learning (Katzenbach and Smith, 1993; Marsick and Watkins, 1992; Ancona and Caldwell, 1987; Hackman, 1990). This article proposes a method to integrate this research and build a bridge from individual to group to organizational learning.

Background

Dechant and Marsick (1991, 1992, 1993) have developed an instrument for testing how well teams operate as learning groups. Team members respond to sixty questions in a paper and pencil test. Team members are then provided feedback on their team's profile.

In this study the Dechant-Marsick Team Learning Survey Learning Survey was administered to two doctoral cohort groups attending The George Washington University's (GWU) Human Resource Development Program. Application of the instrument, the results and the implications of the study are available from the author and outside the scope of this report.

The Literature

Literature in education discusses several benefits for cohort education (Barnett and Caffarella, 1992; Barnett and Muse, 1993; Geltner, 1993). However, group literature from organizational sciences suggests that, in addition to benefits, problems exist with groups and group dynamics. Cohort faculty and administrators can expect regression to fantasy states (Bion, 1961), paradox (Smith and Berg, 1987), disruption (Gersick, 1991, 1988), a need to span boundaries (Ancona, 1987), and critical issues of identity at formation (Hackman, 1990). Organizational researchers would expect the cohort group to meet socio-emotive needs (Blake & Mouton, 1984) and that irrational and rational mental states would co-exist in a systems dynamic (Parsons, 1938, 1951). Indeed, a dark side to groups exists involving groupthink (Janis, 1972) and scapegoating (Eagle and Newton, 1981). Feedback from the survey offers cohorts a method to manage issues of group dynamics that are central to making a group a team. Learning to be a team is the "process of aligning and developing the capacity of a team to create the results its members truly desire" (Senge, 1990, p. 236).

The Instrument

Dechant and Marsick's (1993) Team Learning Survey includes several scoring dimensions derived from five theories of learning processes: framing and reframing (Mezirow, 1991), crossing boundaries (Gladstein/Ancona, 1984, 1987), integrating perspectives (Ackoff, 1978) and experimenting (Bigge & Shermis, 1992).

copyright, Andrea Hornett, 1997

These five processes of learning are interrelated. Dechant and Marsick report that Cronbach Alpha measures and factor analyses did not "support the presence of separate factors in this scale" (Dechant and Marsick, 1993, Facilitator's Guide). The instrument elicits data on team learning outcomes, team learning processes, team members' appreciation for teamwork, individual expression in the group, and operating principles. Part two of the survey relates to organizational learning conditions (the context in which a team operates), organizational learning contributions, team operations and the climate for collaboration within the team's (cohort's) organizational setting. This study provided compatible, but slightly differing, information for the two cohorts.

Findings

The cohort (Cohort V) who had attended the program longer scored better bu., in general, the scores were compatible. There were no strong favorable or synergistic scores. Differences between cohorts and teams may account for this finding. Cohorts are groups by design with individual performance goals. The rewards for cohort members are individual grades and degrees. Teams, especially successful teams (Senge, 1990), have a collective goal and collective accountability for performance. Collective team rewards is an area still open to research.

Conclusions

Cohort teachers and administrators can work with cohorts to develop collective goals (e.g., creating a learning environment). The Marsick/Dechant instrument offers a method to assess performance toward collective goals and to measure development of favorable and synergistic learning environments. Students can use their cohort as a real life laboratory to learn group dynamics and to develop their abilities as team leaders and players in organizations. Cohort experiences can also prepare facilitators of teamwork.

Implications of the Model

The Marsick model can be redrawn without distorting its dynamics to compare it with Huber's (1991) model for organizational learning. Huber posits four organizational learning constructs:

1. knowledge acquisition which is the "process by which knowledge is obtained" (Huber, 1991, p. 90) consists of congenital learning, experiential learning, vicarious learning, grafting, searching and noticing;

2. information interpretation which consists of cognitive maps and framing, media richness, information overload and unlearning (Hedberg, 1981);

3. information distribution which is essentially an integrating function for organizational learning because it is "the process by which information from different sources is shared" (Huber, 1991, p. 90); and

4. organizational memory which includes storing information for future use, retrieving information and computer-based memory.

Marsick's model can be redrawn into four aspects parallel to Huber's model. Consequently, a linkage can be made between Marsick's instrument and diagnosing organizational learning. This framework may prove useful to managers of teams or cohorts who wish to understand the organizational context and the reciprocal interactions of the cohort or team and its organization.

Dechant and Marsick's instrument provides data on team learning conditions, appreciation of teamwork and use of operating principles as well as organizational learning conditions (support of team operations and support for collaboration across the organization). These inputs help to create the context within which the combined Huber/Marsick Model functions. However, this combined model

does not go far enough. It does not display the dynamics of the other learning functions of the Dechant and Marsick survey. An alternative solution is posed by the Schwandt (1995) organizational learning model. Schwandt's model is congruent with Huber's with one notable exception. He adds meaning. Schwandt includes meaning and memory as a pattern maintenance function in the structuration of a learning and sense making system. By including with meaning and memory the Dechant Marsick model's values for team and organizational learning conditions, the impact of these values and conditions in the learning process can be visualized. The resulting model is shown in Figure 1.

Figure 1

	Means	*Ends*
External	1. Knowledge Acquisition *Individual Expression*	2. Information Interpretation *Team Learning Outcomes & Organizational Learning Contributions*
Internal	4. Memory and Meaning *Values and Patterns of Team Learning* *Teamwork Appreciation & Operating Principles*	3. Information Distribution *Team Learning Processes: Frame/Reframe Integrating Perspectives Crossing Boundaries for Experimenting* *Support for Operations of Teams & Support for Collaboration*

Teamwork Appreciation and Operating Principles reflect individual and organizational values that guide the learning system. In quadrant three, the integrating functions of Support for Operation of Teams and Support for Collaboration are evidence of organizational norms for teamwork. The individual learning functions of Framing and Reframing, Crossing Boundaries and Experimenting provide means of integrating learning utilizing normative functions for transaction and transformation of learning.

Further empirical study needs to be conducted to test this combined construct using Marsick's instrument and Schwandt's model of dynamics of learning and performing (Schwandt, 1995). The Dechant/Marsick instrument provides the data for each of the four quadrants of this model. This data could be supplemented with qualitative data from interviewing team members or observing teams in action.

This study's data is depicted in the Huber-Marsick-Schwandt model in Figure 2. Quadrant 2 is representative of outcomes or results. Cohort V appears to have more positive results than cohort VI. Because Cohort V has an integrating function (Quadrant 3) that is pooled, bordering on synergistic, it is better able to achieve more positive outcomes than Cohort VI. Parsons, Bales and Shils (1953) and Hare (1962) speculate that cybernetic hierarchies operate in these learning systems. Consequently, strong integrating functions can produce results even if environmental interface functions, such as knowledge acquisition, are relatively weak.

Figure 2

	Means	*Ends*
External	1. Knowledge Acquisition *Individual Expression* Cohort V: unfavorable Cohort VI: unfavorable	2. Information Interpretation *Team Learning Outcomes* Cohort V: favorable Cohort VI: neutral *Organizational Learning Contributions* Cohort V: neutral Cohort VI: unfavorable
Internal	4. Memory and Meaning *Values and Patterns of Team Learning* *Teamwork Appreciation* Cohort V: neutral Cohort VI: unfavorable *Operating Principles* Cohort V: neutral Cohort VI: neutral	3. Information Distribution *Team Learning Processes:* *Frame/Reframe* *Integrating Perspectives* Cohort V: pooled/synergistic Cohort VI: fragmented *Support for Operations of teams* Cohort V: neutral Cohort VI: unfavorable *Support for Collaboration* Cohort V: neutral Cohort VI: neutral

The analysis of the findings in this study using the combination Marsick-Huber-Schwandt model indicates the quadrants that may be useful as starting points for teachers, administrators and cohort members who seek to strengthen team learning in cohorts. For example, the starting point for Cohort VI is to work on integrating factors to achieve more pooled and less fragmented learning processes. Further research is needed using the instrument and the learning models for diagnosis and intervention.

The Dechant/Marsick instrument offers a linkage between individual, group and organizational learning. It can be useful as a diagnostic tool and to indicate learning at multiple levels of analysis. Teams and cohorts express the fundamental concerns of group process (Lewin, 1947). Research that integrates both areas promises to be rewarding for both team learning and cohort development.

References

Ackoff, R. (1981). Creating the corporate future: plan or be planned for. New York: Wiley.

Ancona, D.G. & Caldwell, D.F. (1987). Management issues facing new-product teams in high-technology companies. Advances in Industrial and Labor Relations. JAI Press. 4: 199-221.

Bales, R.F. (1950, 2nd printing 1951). Interaction process analysis: A method for the study of small groups. Cambridge, Mass: Addison-Wesley Press, Inc.

Barnett, B.G. & Caffarella, R.S. (1992). The use of cohorts: A powerful way for addressing issues of diversity in preparation programs. S.B. Merriam and R.S. Caffarella, Eds. Learning in Adulthood. Chapters 9 & 16, San Francisco: Jossey Bass.

Barnett, B.G. & Muse, I.D. (1993). Cohort groups in educational administration: promises and

challenges. Journal of School Leadership. 3. 400-415.
Bigge, M.L. & Shermis, S.S. (1992, 5th edition). Learning theories for teachers. New York: Harper Collins.
Bion, W.R. (19). Experiences in groups and other papers. New York: Basic Books.
Blake, R.R. & Mouton, J.S. (1984). Overcoming group warfare. Harvard Business Review. 62. Nov./Dec: 98-108.
Dechant, K. & Marsick, V. (1991, 1992, 1993). Team learning survey. Published and distributed by Organization Design and Development, Inc.
Dechant, K., Marsick, V.J. & Kasl, E. (1993). Towards a model of team learning. Studies in Continuing Education. 15. 1: 1-14.
Eagle, J. & Newton, P.M. (1981). Scapegoating in small groups: an organizational approach. Human Relations. 34. 4: 283-301.
Geltner, B.B. (1993). Collaborative action research: a critical component in the preparation of effective leaders and learners. Paper, Annual Meeting of the University Council for Educational Administration in October 29-31.
Gersick, C.J.G. (1988). Time and transition in work teams: toward a new model of group development. Academy of Management Journal. 32. 2: 274-309.
Gersick, C.J.G. (1991). Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm. Academy of Management Review. 16. 1: 10-36.
Gladstein, D. (1984). Groups in context: a model of task group effectiveness. Administrative Science Quarterly. 29. December: 499-517.
Hackman, J.R. (1990). Groups that work and those that don't: Creating conditions for effective teamwork. San Francisco: Jossey Bass.
Hare, A.P. (1962). Handbook of small group research. New York: The Free Press, MacMillan.
Hedberg, B.L.T. (1981). How organizations learn. Nystrom, P.C. & Starbuck, W.H. (Eds.). Handbook of Organizational Design. Vol. 1. New York: Oxford University Press.
Huber, G.P. (1991). Organizational learning. Organizational Science. 2. 1: 88 - 115.
Lewin, K. (1947). Frontiers in group dynamics: concept, method and reality in social science. Human Relations,1: 5-41.
Janis, I.L. (1972). Victims of groupthink. Boston: Houghton Mifflin.
Marsick, Victoria J. (1990). Altering the paradigm for theory building and research in human resource development. Human Resource Development Quarterly. 1. 1:5-25.
Parsons, T. (1951). The social system. Glencoe, Illinois: The Free Press of Glencoe.
Parsons, T., Bales, R.F. & Shils, E.A. (1953). Working papers in the theory of action. Glencoe, Illinois: The Free Press.
Schwandt, D. (1995). Collective learning and performance: Integration processes in non-linear social systems. Paper and presentation. 1995 Conference on The Organizational Dimensions of Global Change: No Limits to Cooperation. Academy of Management Regional Meeting: Case Western University, Cleveland, Ohio.
Smith, K.K. & Berg, D.N. (1987). Paradoxes of group life: Understanding conflict, paralysis and movement in group dynamics. San Francisco: Jossey Bass.
Tuckman, B.W. (1965). Developmental sequence in small groups. Psychological Bulletin. 63. 6: 384-399.
Weick, K.E. (1995). Sensemaking in organizations. Thousand Oaks, CA: Sage Publications.

Measuring Dimensions of the Learning Organization

Karen E. Watkins
The University of Georgia

Baiyin Yang
Auburn University

Victoria J. Marsick
Teacher's College of Columbia University

This paper reports preliminary findings from an ongoing instrument development and validation study of dimensions of the learning organization. The research project involved use of the survey across numerous organizations to establish reliability and validity and the development of emerging norms for each scale dimension.

Despite long term interest in the concept of the learning organization, little has been done to empirically document and explore the phenomena. On the one hand, there has been considerable conceptual confusion about the nature of learning at the organizational level (Meyer, 1982, Watkins and Marsick, 1993, Argyris and Schon, 1978 and 1996, March and Olsen, 1976, Fiol and Lyles, 1985). On the other hand, few organizations have implemented the idea at a level that would permit intensive study. Therefore, the purpose of this research was to develop and validate a measure of an organization's current state relative to key components identified with the learning organization. Additionally, this study sought through exploratory analyses to begin to identify cross-organizational means on key dimensions of the learning organization.

Two research questions were answered in this study:

1. Can an internally reliable instrument measuring dimensions of the learning organization be developed?
2. Does the instrument demonstrate content and predictive validity?

Theoretical Framework

The theoretical framework undergirding the research is a model of the learning organization developed by Watkins and Marsick (1993, 1996) in which critical changes which must occur at the individual, group, organizational, and system levels were identified based on an extensive review both of learning organization literature and practical learning organization experiments. These action imperatives form the basis for the Dimensions of the Learning Organization Questionnaire (DLOQ) used in this study. Six dimensions were identified in Watkins and Marsick (1993), and an additional dimension concerning the overall leadership required to implement these action imperatives was added in their later work (Watkins and Marsick, 1996). These dimension are: create continuous learning opportunities, promote dialogue and inquiry, promote collaboration and team learning, empower people toward a collective vision, establish systems to capture and share learning, connect the organization to its environment, and provide strategic leadership for learning.

Methodology

This is an instrument development and validation study. An item pool was generated by the instrument authors based on behavioral evidence of each dimension identified in their research on the learning organization. Respondents rate each item in terms of how things are now and how they should be on a six point Likert type scale from "almost never true" to "almost always true." For instrument consistency, each scale consists of six items developed by Watkins and Marsick as reflective of their theoretical framework. Items were further refined through item analysis by graduate students in two universities for coherence and readability.

© *Karen E. Watkins, Baiyin Yang, Victoria J. Marsick,, 1997*

Three stages of field testing were conducted to ensure the reliability and validity of the scale. In each of the stages, managers and human resource developers from different organizations filled out the scale with regard to the learning organization dimensions as reflected in their organization or work group. Their responses were then coded and analyzed using the Statistical Package for the Social Sciences (SPSS, Inc., 1989). An item analysis procedure was performed. Reliability testing enabled revision of the surveys into their final form. Analysis of alpha coefficients for each scale identified items with low item-total correlations. These items were replaced or revised in later versions with an overall eye toward content validity. The field tests continued until acceptable reliability and content validity were achieved. In addition, a response set was added to the third version of the scale which permitted respondents to indicate the extent to which their work group or organization should be implementing each item. This scale was added in order to permit organizations to identify their own level of agreement with the item. This process enabled individuals and organizations to establish their own norms while permitting the researchers to verify the content and face validity of the scales.

Data Sources and Evidence

The surveys were distributed to a non-random sample of respondents from multiple organizations. For version three, we received 191 usable surveys, 71 surveys were returned for version 2, and 48 surveys for version 1. Only data from version 3 are reported here.

Results and Conclusions

Findings for each of the research questions are given below.

1. Can an internally reliable instrument measuring dimensions of the learning organization be developed?

The following data in Table 1 is based on an N of 191 for scale means and 116 for reliability estimates (except for the leadership dimension which was added later and for which there were 74 responses and the newest "measuring results" scale for which there were 60 responses).

Table 1. Means and Alpha Scores by Scale

Scale Name	N	Mean [based on a six point scale]	Alpha
Continuous Learning	191	3.66	.816
Inquiry & Dialogue	192	3.63	.870
Team Learning	186	3.44	.862
Structures to Capture Learning	189	2.82	.846
Empowerment	184	3.18	.851
Systemic Connections	186	3.51	.857
Providing Strategic Leadership for Learning	74	4.38	.831
Measuring Results [combined]	61	4.16	.818
Financial Results	61	4.21	.768
Knowledge Results	61	4.11	.779

Changes to version 3 of the DLOQ addressed within people variance detected in the first two versions, particularly in the dimensions of "creating embedded structures to capture and share learning" and "providing strategic leadership for learning." Questions which accounted for the highest variance were altered and a self-norming scale was added. Between scale correlations were all acceptable in the earlier version, ranging from .42 to .80 and .47 to .73 in the current version. Further analysis is ongoing to secure a sample size sufficient enable exploratory factor analysis to establish empirically-derived dimensions of the learning organization.

Results indicate Cronbach's Alpha coefficients for each dimension of the scale range from .716 to .859 on the current version. Overall, the reliability estimate for the entire scale is .945 for the 42 item version of the instrument. Reliability estimates for the new organizational results

scales are also high, ranging from .768 to .818. This study suggests that a reliable instrument measuring the dimensions of the learning organization can be developed.

2. Does the instrument demonstrate content and predictive validity?

Since the items were generated by the authors based on the theoretical framework which undergirds the instument, content validity was obtained through their expert analysis. In addition, exploratory factor analysis will enable the generation of an empirically derived model of dimensions of the learning organization. A preliminary run of a confirmatory factor analysis procedure confirmed the presence of six factors, five of which correspond to the scale categories designated by the authors. A larger N is required to complete the procedure.

In addition, content analysis was further examined by the degree of consensus across respondents that these dimensions of the learning organization should be present in their work groups or organizations. Means for "should be" responses are given in Table 2 below [N=191]. ranged from 4.98 to 5.53, indicating fairly substantial agreement with the dimensions identified by the scale authors. Only the empowerment scale fell below five points on a six point scale. Overall, then, content validity has been established through theoretical consistency and expert analysis.

Table 2. Means & Standard Deviations for "Should Be" responses for each of the dimensions of the learning organization

Dimension	Cont. Lrng	Inquiry & Dialogue	Team Learning	Embed-ded Structure	Empow-ernment	System Connec-tions	Provide Leader-ship [N=72]
Means	5.50	5.53	5.16	5.13	4.98	5.17	5.46
Standard Deviation	3.87	3.60	5.34	5.22	5.03	4.53	2.51

Table 2 confirms the widespread agreement anong respondents with these dimensions of the learning organization.

Predictive validity refers to the extent to which the instrument scores predict criterion measurement (Crocker & Algina, 1986). It is reasoned that the instrument's predictive validity will be shown if scores on the dimensions of the learning organization can successfully predict organization performance. A set of twelve items were constructed to measure a construct of organization performance. These measures were added to the DLOQ and distributed to 2949 family business leaders within a two hour driving radius of Atlanta, GA. A total of 66 usable responses were collected to study the predictive validity of the instrument. Item analysis procedure showed that the 12 measures of organization performance had acceptable reliability estimates and the coefficient alpha was .818. Furthermore, these items showed strong internal consistency as the overall reliability estimate would not be significantly improved by simply discarding inappropriate items.

In order to determine the predictive validity of the DLOQ in terms of organization performance, multiple regression analysis was conducted where the measure of organization performance was designated as a response variable and scores on seven dimensions of learning organization were treated as predictor variables. The regression analysis results indicated that the multiple correlation between learning behaviors measured on seven dimensions of the DLOQ and the measure of organization performance was statistically significant ($p < .05$). The estimated multiple correlation coeeficient was .570 and the R-square was .324. In other words, nearly one third of the variation in organizational performance can be explained by the organizational learning behaviors measured on the DLOQ. That is to say, the DLOQ showed strong predictive validity in predicting overall organization performance.

Educational and Scientific Importance of this Study

This study is significant to our understanding of the learning organization because it enables us to begin to track movement across critical dimensions over time and to begin the process of determining norms for this type of change effort. Future research efforts are focused on creating an empirically derived model of the learning organization which may enable us to predict under what conditions organizations will make the necessary changes to facilitate this transformation (Watkins and Marsick, 1996), whether or not these changes correlate with higher financial or knowledge results, and to determine differences in implementation across organizations. Further research on these outcome measures of organizational learning will allow organizations not only to track their progress in implementing the learning organization construct, but also to monitor whether or not their implementation is yielding higher levels of learning and financial performance at the organizational level.

Finally, this scale focuses on the organization as the unit of analysis. Future studies will focus on obtaining large scale samples within single organizations to guide learning organization implementation efforts. For example, a recent use of the scale by a major consulting firm's strategic planning group for human resource development enabled the development of areas of strategic leverage where the organization identified a significant gap between where it is and where it should be, areas of strategic advantage where the organization was significantly above the norm, and areas of strategic disadvantage where the organization was significantly below the norm for each dimension of the learning organization. Action planning focused on identifying the high priority areas the organization wanted to address in the coming year, and specific strategies to address the strategic areas identified. An adaptation of the DLOQ was created for potential use with customers for comparison with the organization's responses.

Since positive evidence of validity and reliability for the instrument was found, the instrument will provide a useful tool for future research on dimensions of the learning organization.

References

Argyris, C. and Schön, D. (1978) *Organizational learning: A theory of action perspective.* San Francisco, CA; Jossey-Bass.

Argyris, C. and Schön, D. (1996) *Organizational learning II: Theory, method, and practice.* Reading, MA: Addison Wesley Publishing Co.

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory.* New York: CBS College Publishing.

Fiol, M.C. and Lyles, M.A. (1985) Organizational learning. *Academy of Management Review, 10*(4), 803-813.

March, J.G. and Olsen, J.P. (1976). *Ambiguity and choice in organizations.* Oslo, Norway: Universitetsforlaget.

Meyer, A. (1982). Adapting to environmental jolts. *Administrative Science Quarterly, 27*(4), 515-537.

Watkins, K. and Marsick, V. J. (1993) *Sculpting the learning organization.* San Francisco: Jossey-Bass.

Watkins, K. and Marsick, V. J. (1996) *In action: Creating the learning organization.* Alexandria, VA: American Society for Training and Development.

Finding Common and Uncommon Ground among Learning Organization Models

Martha A. Gephart
Columbia University, Teachers College

Victoria J. Marsick
Columbia University, Teachers College

Mark E. Van Buren
American Society for Training and Development

We present the results of the first critical look of its kind at conceptualizations of learning organizations behind existing models. By comparing models of learning organization scholars to an overarching framework, we are able to identify areas of consensus or divergence. Our analysis also offers insights into areas in need of further theoretical development and empirical investigation.

Since the 1980s, several forces have combined to increase the emphasis many companies are placing on organizational learning. Rising competition in global and domestic markets and the accelerating pace of technological and societal change have demanded that organizations adapt rapidly to changing opportunities and constraints. For most companies, the new focus on learning is part of a quest to retain and improve competitiveness, productivity, and innovation in uncertain technological and market circumstances. In turbulent times such as these, many argue that long term competitive advantage lies with organizations that develop core competencies which enable them to create new products and services swiftly and thus adapt to changing opportunities.

While theories of organizational learning are not new (for example, Argyris and Schon, 1978; Cangelosi & Dill, 1965; Cyert & March, 1963; Fiol & Lyles, 1985; Hedberg, 1981), recently many scholars and practitioners have shifted the focus from organizational learning as a product to a proactive process which they predict will result in better systems level learning. These models speak to the creation of "learning organizations," a formulation that has been popularized in the United States by Senge (1990).

Learning organization models have proliferated within the United States and around the world. Architects of these models often hold very different views about what is needed to create learning at the systems level, and how the changing nature of organizational life and work affects their models. The lack of conceptual clarity and consensus reflected in these diverse views has made it difficult to pursue a clear research agenda tied to theory about change from which to determine the effectiveness of different interventions in achieving desired learning organization outcomes. Our limited knowledge about the effectiveness of interventions based on learning organization models has, in turn, made it difficult for organizations to choose among competing models and instruments when they wish to use the learning organization concept to assess themselves and guide change.

Some theorists have tried to identify core components that seem essential to their models of the learning organization and have created instruments to diagnose and change organizations in consonance with their underlying models. In this paper, we seek to identify common ground among a number of these learning organization models by identifying and analyzing the core components and manifestations which they share.

Research Questions

© *copyright, Martha A. Gephart, Victoria J. Marsick and Mark E. Van Buren, 1997*

To date, no systematic effort has been undertaken to compare existing learning organization models and instruments, or to assess the current state of conceptual development upon which they rest. In light of this, we framed our research questions as follows:

1. In what ways is the concept of the learning organization being interpreted and defined?
2. What patterns, if any, can be identified among core components of different models when assessed against a common overarching framework?
3. What, if any, are the areas of theoretical consensus across models of the learning organization?

This paper presents the results of our research comparing and contrasting learning organization models that were created by a sample of scholars and experts in the United States, Canada, and Europe. We sought to compare a set of models of the learning organization in order to identify what, if any, commonalty could be found across models, where there were differences, and what implications these patterns held for the current state of conceptualization and future research on the learning organization.[1]

Methodology

In 1995, we identified more than twenty-five researchers and practitioners who had developed about a dozen models and diagnostic instruments aimed at conceptualizing and building learning organizations.[2] We asked participants in the study to assess core components of their models and instruments against a common overarching framework called the Learning Organization Assessment Framework (LOAF) (Gephart, Marsick, Van Buren, Spiro, & Lucadamo, 1995) which we developed based on a review of the existing literature and of selected diagnostic instruments.

In creating the LOAF, we adopted an organizational systems perspective to identify the various systems at work in learning organizations and assess their importance in existing models. We looked at underpinnings of the learning organization in three major categories: levels of learning; a set of facilitating organizational systems that need to be in place to support learning; and change management. Table 1 (next page) displays the subcategories included under these three major categories.

The framework consisted of two major sections. The first section contained a comprehensive list of learning organization components found in existing models, grouped under the above categories. The second section provided a number of behavioral indicators for the components in each level of learning orientation and each facilitating organizational system.

Participants in the research were asked to rank each category and component in the framework according to its importance in their learning organization models. They were also asked to rate each behavioral indicator according to its relevance to their model. Two thirds of the participants in the study provided self-assessments of their models using the LOAF. Using these data and the literature review, we conceptualized common and uncommon features of learning organizations in order to advance theoretical insights and provide a foundation for future research on the topic.

---

[1] For a comparison of diagnostic assessment tools included in this study, see Van Buren & Lucadamo (1996). For a discussion of our analysis and conceptualization of learning organizations that resulted from this study, including supporting examples, see Gephart, Marsick, Van Buren, & Spiro (1996).

[2] Models and instruments in this study were created by the following scholars who participated in this research: Giorgio Bertini, Tom Boydell, Bettina Buchel, John Burgoyne, Terry Campbell, Ralph Catalanello, Kathleen Dechant, Tony DiBella, Nancy Dixon, Elizabeth Kasl, Michael Marquardt, Victoria Marsick, Alan Mumford, Glenn Nilson, Michael O'Brien, Judy O'Neil, Dimitrios Pachis, Mike Pedler, Gilbert Probst, John Redding, Angus Reynolds, David Schwandt, Ron Short, Massimo Tomassini, David Ulrich, Karen Watkins, Paul Wooler, and Lyle Yorks.

Table 1

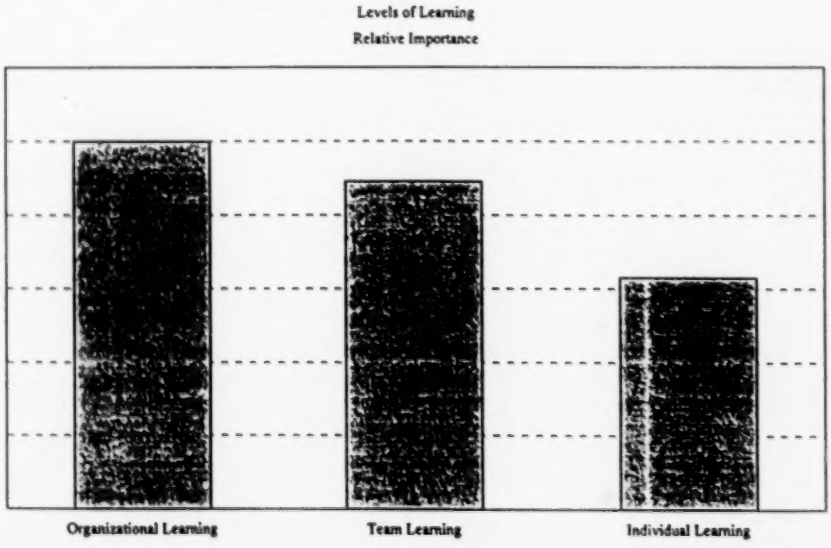
- ❖ Learning Orientations
  - Individual
  - Group/Team
  - Organizational
- ❖Facilitating Organizational Systems
  - Vision and Strategy
  - Leadership and Management
  - Culture
  - Structure
  - Systems and Processes:
    - Communication, Information, and Knowledge Systems
    - Performance Management and Support Systems
    - Technology
- ❖Change Management

Results

Our analyses allowed us to identify key components of the LOAF that seem essential to most models and to identify components that differentiate among existing models of learning organizations. We looked at the data in several different ways.

First, we examined the mean rankings for the categories of the LOAF listed in Table 1. As shown in Figure 1, respondents ranked organizational learning as the most important level of learning in their models. Team learning ranked second in importance, and individual learning last. Models of the learning organization tend to differentiate themselves from other work on learning and organizations by emphasizing the way in which organizations as systems can learn.[3]

Figure 1

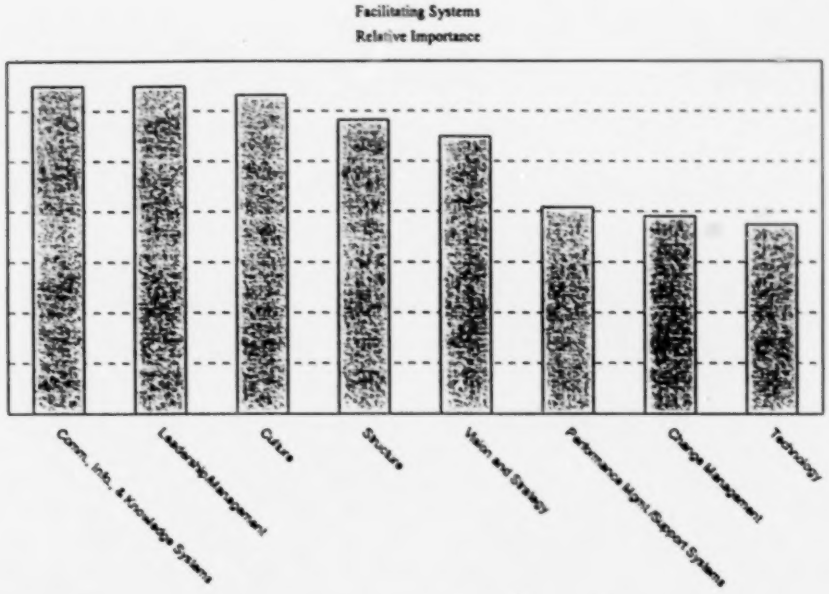


[3] We recognize that there is a debate in the literature as to whether organizational learning is a metaphor or a reality, given that individuals actually do the learning, even though systems can reflect a collective pool of shared resulting knowledge.

BEST COPY AVAILABLE

Figure 2 shows the relative rankings among the remaining categories of the LOAF. Among the categories of facilitating systems, systems for communication, information, and knowledge, and leadership and management led the rankings, followed by the organization's culture. Trailing in the rankings were performance management/support systems, change management, and lastly technology.

Figure 2



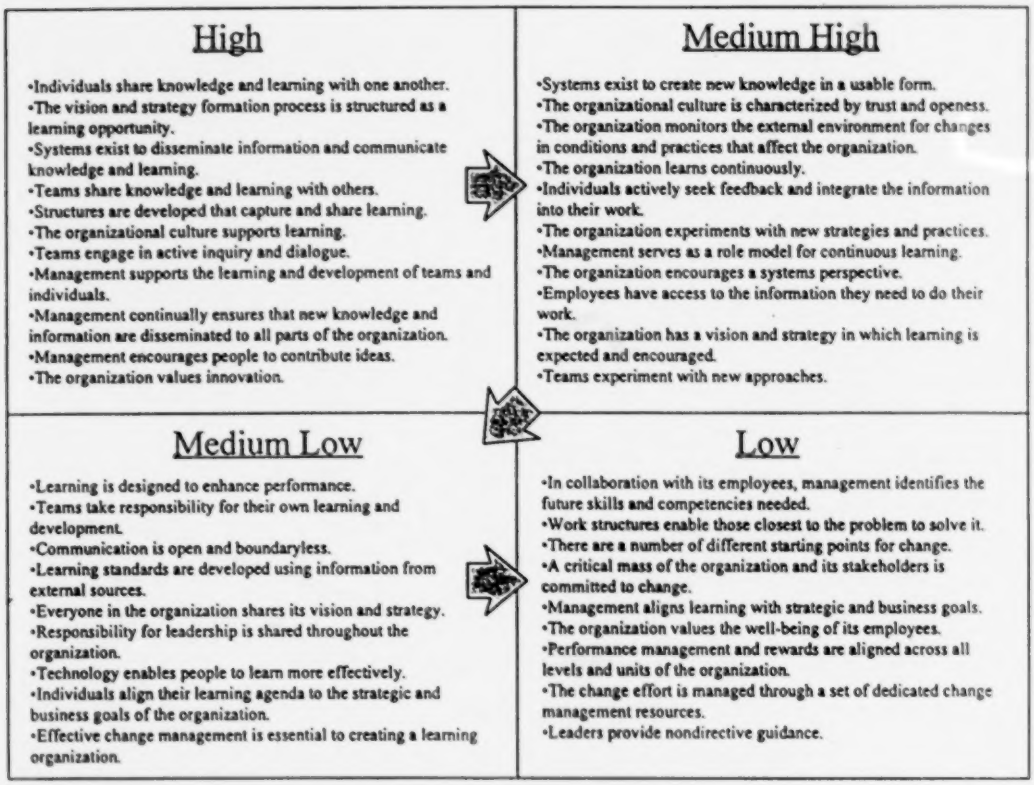
Next we examined the ratings respondents gave to the components within each of the LOAF's categories. We paid special attention to the means and standard deviations of their ratings (on a scale of 1 to 5, with 5 indicating greatest importance). To interpret the results, we found it helpful to divide the learning organization components in our framework into four groups on the basis of their standardized ratings (see Figure 3, next page). Components with z-scores of 1.0 or more above or below the grand mean were designated "high" and "low" respectively. Components with z-scores between .5 and 1.0 were designated "medium high" or "medium low" respectively.

Looking at the means and standard deviations of the components in tandem was particularly helpful in interpreting the results. Almost without exception, components which received low ratings had large standard deviations, while components rated highly had small standard deviations. (The correlation between means and standard deviations was -.80.) There is thus considerable consensus across models of the learning organization about the importance of components in our framework that were highly rated. In contrast, there is considerable disagreement across learning organization models about the importance of components in our framework that received low ratings. Some models consider the components with low ratings to be important; others do not.

When the items in the high and medium high categories are examined, several observations stand out. Highly rated items reflect the emphasis in Figures 1 and 2 on organizational learning; communication, information and knowledge systems; leadership and management; and culture. The majority of the items speak to an understanding of systems level learning that is characterized by knowledge generation, sharing, management, and utilization. Many of these items emphasize ways to examine and make sense of the changing environment, generate or capture knowledge and information, share ideas, and disseminate, store, or retrieve information. Items speak to a culture that values support for learning, collaboration, systems thinking, innovation, trust and

openness; and to leaders who model learning and who structure vision and strategy as opportunities for learning. Individual learning practices emphasize feedback, inquiry and dialogue, experimentation, and knowledge creation.

Figure 3


High
•Individuals share knowledge and learning with one another.
•The vision and strategy formation process is structured as a learning opportunity.
•Systems exist to disseminate information and communicate knowledge and learning.
•Teams share knowledge and learning with others.
•Structures are developed that capture and share learning.
•The organizational culture supports learning.
•Teams engage in active inquiry and dialogue.
•Management supports the learning and development of teams and individuals.
•Management continually ensures that new knowledge and information are disseminated to all parts of the organization.
•Management encourages people to contribute ideas.
•The organization values innovation.
Medium High
•Systems exist to create new knowledge in a usable form.
•The organizational culture is characterized by trust and openess.
•The organization monitors the external environment for changes in conditions and practices that affect the organization.
•The organization learns continuously.
•Individuals actively seek feedback and integrate the information into their work.
•The organization experiments with new strategies and practices.
•Management serves as a role model for continuous learning.
•The organization encourages a systems perspective.
•Employees have access to the information they need to do their work.
•The organization has a vision and strategy in which learning is expected and encouraged.
•Teams experiment with new approaches.
Medium Low
•Learning is designed to enhance performance.
•Teams take responsibility for their own learning and development.
•Communication is open and boundaryless.
•Learning standards are developed using information from external sources.
•Everyone in the organization shares its vision and strategy.
•Responsibility for leadership is shared throughout the organization.
•Technology enables people to learn more effectively.
•Individuals align their learning agenda to the strategic and business goals of the organization.
•Effective change management is essential to creating a learning organization.
Low
•In collaboration with its employees, management identifies the future skills and competencies needed.
•Work structures enable those closest to the problem to solve it.
•There are a number of different starting points for change.
•A critical mass of the organization and its stakeholders is committed to change.
•Management aligns learning with strategic and business goals.
•The organization values the well-being of its employees.
•Performance management and rewards are aligned across all levels and units of the organization.
•The change effort is managed through a set of dedicated change management resources.
•Leaders provide nondirective guidance.

It is harder to identify clear patterns among the items in the low and medium low categories because of the variability in the responses. Many of the lowly rated items fall into the areas in Figure 2 of performance management, change management, and technology. One is struck by the level of disagreement that exists regarding some of the components in these categories. Components such as the value of sharing responsibility for leadership, vision and strategy, team goal setting, decentralized decision making and the identification of needed competencies are central to some models and downplayed by others. Valuing the well being of employees is among the lowest rated components, and yet, many models emphasize caring and nurturing of human resources. Other items ranked low reflect disagreement about the value of practical tools needed to implement learning visions.

Discussion

The learning organization has been pushed by a need to cope with rapid change, and has been pulled by visions of ideal transformation and growth. For the most part, models have been crafted to meet these needs based on observation of best practices. Their architects have turned to pioneer theorists in organizational learning and design for frameworks to explain their experience and for tools to move practice forward.

BEST COPY AVAILABLE

The early pioneers of organizational learning and design to whom they turned, however, developed their theories in a more stable period of history when organizations were hierarchical, command-and-control bureaucracies. The new paradigm values learning, social cooperation, and self regulation instead of tightly circumscribed jobs, close supervision, and entrenched cultures of control. Learning organization models speak to removing barriers (of structure, culture, and systems) to learning and change, and to a prevailing emphasis on transformative and adaptive growth.

The designers of learning organizations incorporated a mix of knowledge bases to explain the phenomena they faced. Models of the learning organization are thus eclectic, and reflect a variety of intellectual disciplines and professional fields of practice. Theory is being written as their creators move forward, which may partially account for the different emphases in these models.

The heart of the change process seems to be a search for better, faster, and deeper knowledge to enhance systems performance in light of rapid shifts in a changing environment. The emphasis on systems level thinking and learning reflects, in part, a need to foster social cooperation and interdependence in organizations that are flatter, decentralized, and inter-connected. Chaos theory helps to explain why and how more people in the system must participate in knowledge creation and idea generation. Innovation theory explains the need for the simultaneous balance of apparently paradoxical concepts such as alignment and disequilibrium. Learning theory seeks to carve a path toward rapid and effective knowledge creation.

There also appears to be a disenchantment with change management in many of these models. It is not clear if this is a deliberate reaction against old-paradigm views of change and/or values, a reflection of the visionary bent of these theorists, or a lack of attention to making implicit change theory more explicit. Nonetheless, we think that many models actually reflect the influence of early work by Kurt Lewin (1947) on the dynamics of change in social environments and on action research, as well as socio-technical systems theory (Emery & Trist, 1963). Lewin emphasized the central role of collective, participative experiments and feedback for effective social change. He focused on unfreezing, and on the interaction of people with their environments. Building on Lewin, Emery & Trist pointed to the role of environmental turbulence in change, and advocated the redesign of work from the bottom up to achieve the joint optimization of social and technical systems. They pioneered the creation of redundant functions through multiskilled teams to support the flexibility and innovation needed to deal with rapid shifts in markets, technologies, lifestyles and jobs, and to remove the barriers to learning and change posed by controlling supervision.

The emphasis in these models on systems-level learning is driven, in part, by the need to change the organization so that new forms of work and being can emerge, and so that the organization can remain competitive. This is a management-driven agenda, which may account for the relatively weaker focus on individual learning. However, many architects of these models also value individual growth and development, and build a case for both personal transformation (O'Brien & Shook, 1995; Short, 1990) and for employability, a case that is being made by some union advocates. Underemphasis of individual learning may reflect the taken-for-granted assumption that individuals must learn for systems to learn, but the relationship across levels of learning has not yet been clearly articulated.

Culture can be an intractable barrier or an important facilitator, so several key aspects of culture are emphasized by most models. It is more important for the culture to be characterized by trust and openness than for communication to be open and boundaryless. Here, we see a focus on removing barriers that is characteristic of systems theory. By contrast, only a few aspects of structure are emphasized, again focused on removing obstacles and on facilitating knowledge creation, sharing, and learning.

A powerful evolving vision appears to be important, but not everyone must share it ("control"). Technology may be helpful but is not necessary. There is more consensus on the importance of technology that facilitates information sharing and dissemination than on the use of technology for learning (which may be seen as more controlling).

The underemphasis on some of the "hows" may represent both the belief that there is not one best way and the belief in the need for a learning rather than a planning and management approach to change. It may also represent the philosophy that once barriers are removed, and knowledge creation and sharing are facilitated, human potential will unfold. Ideas about self-organizing systems may be supplanting planning theory and hence, the low scores for performance and change "management".

Because of the need to be flexible and adaptable to deal with rapid change and uncertainty, multiple, partially conflicting goals must be pursued. Since goals develop and change over time, notions of planning and alignment do not work well. Continual reshaping and clarifying of goals and values necessitate a fluid approach to the design, management and evaluation of change.

Conclusions and Future Directions

Models of the learning organization bring together perspectives on development and change in organizational systems that are not in themselves completely new, but are being reinterpreted in light of pressures to adapt more quickly and to innovate more creatively. The idea of a learning organization holds promise, but we need to know more to better implement it and to judge its impact. The state of existing knowledge and practice poses several challenges for theory and research that need to be addressed to achieve that promise.

First, we do not have a clear, empirical foundation for understanding systems-level learning. Theories in the literature about organizational learning come from different intellectual traditions. They offer competing understandings of how systems learn, but not much in the way of research-based insight into which perspectives offer sounder advice. Perhaps because organizational learning takes place at a total systems level, there is less empirical research that helps us to understand what happens when a large system learns.

Differences among models in their emphasis on individual, team, and organizational learning, and the failure of existing models to articulate relationships across levels, point to a second challenge--the need for better theory and research about how learning across levels is linked.

An area that is underemphasized in current models of learning organizations--their links to performance outcomes--poses another key challenge for theory. Future work needs to define the expected outcomes of systems-level learning and their links both to performance outcomes and to the facilitating organizational systems that create them.

In order to specify the links between facilitating organizational systems and the outcomes of systems-level learning, future work needs to clarify and integrate the theoretical bases of learning organization models. Areas of common ground uncovered in our analysis draw upon several established bodies of theory and research, including socio-technical systems, learning theory, innovation, and cooperative dynamics. By making the contribution of these theories more explicit, and by specifying the links between constructs in those theories and outcomes of systems-level learning, future work can develop the theoretical foundation for learning organization models which can serve as the basis for research designed to test key linkages and the effectiveness of interventions on them.

Our analysis also suggests that the concept of a learning organization may be inherently paradoxical. High performance learning organizations seem to be adept at balancing apparently opposing forces. Existing models of learning organizations have been formulated in the context of organizational realities that are often dysfunctional for learning and change. A challenge for future work is to define combinations of apparently contradictory elements that lead to the joint optimization of learning and performance.

A final challenge is the need for better tools to measure constructs and test links in our theory. Measurement is key to selecting and fine tuning interventions, as well as to determining which interventions will have the greatest benefit in taking us to our goals. Better measurement tools will enable us to begin tracing the impact that different interventions have on systems-level learning and performance.

References

Argyris, C., & Schon, D. A. (1978). *Organizational learning: A theory of action perspective.* Reading, MA: Addison-Wesley.

Cangelosi, V. E., & Dill, W. R. (1965). Organizational learning: Observations toward a theory. *Administrative Science Quarterly*, 10. 175-203.

Cyert, P., & March, J. G. (1963). *A behavioral theory of the firm.* Englewood Cliffs, NJ: Prentice-Hall.

Emery, F. E., & Trist, E. L. (1963). *The causal texture of organizational environments.* Paper presented to the International Psychology Congress, Washington, D.C., 1963. Reprinted in Human Relations, 1964, 18 (1), 21-32.

Fiol, C. M., & Lyles, M. A. (1985). Organizational learning. *Academy of Management Review*, 10 (4), 803-813.

Gephart, M. A., Marsick, V. J., Van Buren, M. E., & Spiro, M. S. (1996). Learning organizations come alive. *Training & Development*, 50 (1), 35-44.

Gephart, M. A., Marsick, V. J., Van Buren, M. E., Spiro, M., & Lucadamo, L. I. (1995). *The Learning organization assessment framework.* Unpublished manuscript, ASTD.

Hedberg, B. (1981). How organizations learn and unlearn? In P.C. Nystrom & W. H. Starbuck (Eds.). *Handbook of organizational design* (pp. 8-27). London: Oxford University Press.

Lewin, K. (1947). Frontiers in group dynamics, part 1: Concept, method and reality in social science: Social equilibria and social change. *Human Relations*, 1, 5-41.

O'Brien, M. & Shook, L. (1995). *Profit from experience: How to make the most of your learning and your life.* Bard and Stephen.

Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization.* New York: Doubleday.

Short, R. (1990). *Learning from your experience with people.* Seattle, WA: The Leadership Group.

Van Buren, M. E. & Lucadamo, L. (1995). *ASTD's guide to learning organization assessment instruments.* Alexandria, VA: ASTD.